Pushing the Envelope			
2005 Science			
Course of Study			
Alabama Science			
Grades K-12			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	AL	SCI.K-12.4	Students make measurements using appropriate metric units for measuring length, volume, and mass
Chemistry (pgs. 25-41)	AL	SCI.K-12.4	Students make measurements using appropriate metric units for measuring length, volume, and mass
Pushing the Envelope			
2005 Science			
Course of Study			
Alabama Science			
Grade 5			
Activity/Lesson	**State**	**Standards**	
Chemistry (pgs. 25-41)	AL	SCI.5.1	Students will identify evidence of chemical changes through color, gas formation, solid formation, and temperature change.
Physics and Math (pgs. 43-63)	AL	SCI.5.2.3	Students will understand mass, volume and density including relating density to the sinking or floating of an object in a liquid
Pushing the Envelope			
2005 Science			
Course of Study			
Alabama Science			
Grade 8			
Activity/Lesson	**State**	**Standards**	
History of Aviation Propulsion (pgs. 5-9)	AL	SCI.8.8.2	Students will identify Newton's three laws of motion including interpreting distance–time graphs
Types of Engines (pgs. 11-23)	AL	SCI.8.1.3	Students will identify steps in the scientific method including measuring dimension, volume, and mass using Système International d'Unités (SI units)
Chemistry (pgs. 25-41)	AL	SCI.8.1.3	Students will identify steps in the scientific method including measuring dimension, volume, and mass using Système International d'Unités (SI units)
Chemistry (pgs. 25-41)	AL	SCI.8.9.1	Students will describe how mechanical advantages of simple machines reduce the amount of force needed for work. Describe how mechanical advantages of simple machines reduce the amount of force needed for work. Students will describe the effect of force on pressure in fluids

Physics and Math (pgs. 43-63)	AL	SCI.8.8.1	Students will identify Newton's three laws of motion defining terminology such as action and reaction forces, inertia, acceleration, momentum, and friction
Rocket Activity (pgs. 69-75)	AL	SCI.8.8.1	Students will identify Newton's three laws of motion defining terminology such as action and reaction forces, inertia, acceleration, momentum, and friction
Rocket Activity (pgs. 69-75)	AL	SCI.8.9.1	Students will describe how mechanical advantages of simple machines reduce the amount of force needed for work. Describe how mechanical advantages of simple machines reduce the amount of force needed for work. Students will describe the effect of force on pressure in fluids
Pushing the Envelope			
2005 Science			
Course of Study			
Alabama Science			
Grades 9-12 (Physical Science Core)			
Activity/Lesson	**State**	**Standards**	
History of Aviation Propulsion (pgs. 5-9)	AL	SCI.9-12.PS.7.1	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including interpreting graphic representations of velocity versus time and distance versus time
History of Aviation Propulsion (pgs. 5-9)	AL	SCI.9-12.PS.12	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.
Types of Engines (pgs. 11-23)	AL	SCI.9-12.PS.7.2	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including solving problems for velocity, acceleration, force, work, and power
Types of Engines (pgs. 11-23)	AL	SCI.9-12.PS.12	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.
Chemistry (pgs. 25-41)	AL	SCI.9-12.PS.12	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PS.7.2	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including dolving problems for velocity, acceleration, force, work, and power
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PS.7.3	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including describing action and reaction forces, inertia, acceleration, momentum, and friction in terms of Newton’s three laws of motion

Physics and Math (pgs. 43-63)	AL	SCI.9-12.PS.7.4	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including determining the resultant of collinear forces acting on a body
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PS.12	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PS.7.2	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including dolving problems for velocity, acceleration, force, work, and power
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PS.7.3	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including describing action and reaction forces, inertia, acceleration, momentum, and friction in terms of Newton's three laws of motion
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PS.7.4	Students will relate velocity, acceleration, and kinetic energy to mass, distance, force, and time including determining the resultant of collinear forces acting on a body
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PS.12	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.
Pushing the Envelope			
2005 Science			
Course of Study			
Alabama Science			
Grades 9-12 (Physics Core)			
Activity/Lesson	**State**	**Standards**	
Types of Engines (pgs. 11-23)	AL	SCI.9-12.PH.4	Students will describe quantitative relationships for velocity, acceleration, force, work, power, potential energy, and kinetic energy.
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PH.1.2	Students will explain linear, uniform circular, and projectile motions using one- and two-dimensional vectors including describing forces that act on an object
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PH.3	Students will explain planetary motion and navigation in space in terms of Kepler's and Newton's laws.
Physics and Math (pgs. 43-63)	AL	SCI.9-12.PH.4	Students will describe quantitative relationships for velocity, acceleration, force, work, power, potential energy, and kinetic energy.
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PH.1.2	Students will explain linear, uniform circular, and projectile motions using one- and two-dimensional vectors including describing forces that act on an object
Rocket Activity (pgs. 69-75)	AL	SCI.9-12.PH.4	Students will identify metric units for mass, distance, time, temperature, velocity, acceleration, density, force, energy, and power.